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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/870,180
Filing Date: May 30, 2001
Appellant(s): SMITH ET AL.

James Lilly
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/11/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 3/15/04 has been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: Claim 32 is rejected over Chau et al. (U.S. Patent 5,735,988) in view of Stamm (U.S. Patent 3,712,706) and Rowland (U.S. Patent 3,810,804).

(7) Grouping of Claims

Appellant's brief includes a statement that claims 22-36 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

(A) Listing of the Prior Art of Record

5,735,988	CHAU et al.	4-1998
3,712,706	STAMM	1-1973
3,810,804	ROWLAND	5-1974

(B) Brief Description of the Prior Art of Record

Chau et al. disclose a method for making a retroreflective article. Chau et al. teach the method comprises providing a base layer, forming a structured surface on the base layer, applying a reflective coating to the structured surface, applying an at least partially transparent, flowable, and radiation curable adhesive (e.g. acrylic based) to the structured surface, placing a substrate over the radiation curable adhesive, and curing the adhesive to form the retroreflective article. Alternatively, Chau et al. teach applying the radiation curable adhesive by first coating the substrate and then, applying the coated substrate to the structured surface. Chau et al. specifically teach choosing the surface topography of the structured surface is well within the ordinary skill of one in the art.

Stamm discloses a surface topography to produce retroreflective articles having high reflective efficiency. Stamm teaches forming a high efficiency retroreflective article through a method comprising providing a base layer, forming a structured surface comprising cube corner cavities separated on their top surface within the base layer, applying a reflective foil to the structured surface, and filling the structured surface with an optically transparent material.

Rowland discloses a method for making a retroreflective article. Rowland teaches the method comprises providing a base layer having a structured surface, applying a reflective coating to the structured surface, applying a flowable, acrylic pressure-sensitive adhesive to the structured surface, and laminating a releasable sheet to the structured surface. Rowland further teaches removing the releasable sheet to mount the reflective material on a surface.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 31, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al. (U.S. Patent 5,735,988) in view of Stamm (U.S. Patent 3,712,706).

Chau et al. disclose a method for making a retroreflective, i.e. engineered reflective surface, article (Column 9, lines 39-48). Chau et al. teach the method comprises providing a base layer, forming a structured surface on the base layer, applying a reflective coating to the structured surface, applying an at least partially transparent, flowable, and radiation curable adhesive (e.g. acrylic based) to the structured surface, placing a substrate over the radiation curable adhesive, and curing the adhesive to form the retroreflective article (Figures 1C-1F and Column 5, lines 57-65 and Column 6, lines 1-19). Alternatively, Chau et al. teach applying the radiation curable adhesive by first coating the substrate and then, applying the coated substrate to the structured surface (Column 6, lines 20-21). Chau et al. are silent as to the structured surface comprising cube corner cavities. However, Chau et al. require a retroreflective surface topography, and Chau et al. specifically teach choosing the surface topography of the structured surface is well within the ordinary skill of one in the art (Column 5, lines 14-21 and Column 10, lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention

was made to use as the surface topography in the method taught by Chau et al. the surface topography comprising cube corner cavities as suggested by Stamm to create a retroreflective article having high retroreflective efficiency.

Stamm discloses a surface topography to produce retroreflective articles having high retroreflective efficiency. Stamm teaches forming a high efficiency retroreflective article through a method comprising providing a base layer, forming a structured surface comprising cube corner cavities separated on their top surface on the base layer, applying a reflective foil to the structured surface, and filling the structured surface with an optically transparent material (Figure 1 and the abstract and Column 2, lines 3-13 and Column 3, lines 35-55 and Column 5, lines 8-14 and Column 6, lines 38-45).

Claims 22-30, 32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al. and Stamm as applied to claims 31, 33, 34, and 36 above, and further in view of Rowland (U.S. Patent 3,810,804).

Regarding claims 22 and 32, Chau et al. and Stamm as applied above teach all of the limitations in claims 22 and 32 except for specifically reciting the radiation curable adhesive is pressure-sensitive. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated that acrylic based radiation curable adhesive such as that taught by Chau et al. as modified by Stamm is pressure-sensitive as evidenced by Rowland wherein the pressure sensitive properties of an acrylic based adhesive are noted in the same environment.

Rowland discloses a method for making a retroreflective article. Rowland teaches the method comprises providing a base layer having a structured surface, applying a reflective coating to the structured surface, applying a flowable, acrylic pressure-sensitive adhesive to the

structured surface, and laminating a releasable sheet to the structured surface. Rowland further teaches removing the releasable sheet to mount the reflective material on a surface (Figure3 and Column 4, lines 42-50 and Column 7, lines 63-70 and 74-75 and Column 8, lines 1-2 and the Examples).

Regarding claims 26 and 27, Chau et al. and Stamm as applied above teach all of the limitations in claims 26 and 37 except for a specific teaching of using a releasable liner as the substrate. However, Chau et al. are not limited to any particular type of substrate, and Chau et al. are not limited to any particular retroreflective article. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the substrate taught by Chau et al. as modified by Stamm a releasable liner as suggested by Rowland as it was conventional in the art to form the retroreflective article on a releasable liner substrate when the retroreflective article is not permanently mounted during its production such that it may be applied later to a final substrate.

Regarding claims 28 and 29, Chau et al. and Stamm as applied above teach all of the limitations in claims 28 and 29 except for a specific teaching of incompletely filling the cube corner cavities with adhesive. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated that when applying the adhesive to the structured surface as taught by Chau et al. as modified by Stamm some air would remain trapped and the cavities would be incompletely filled resulting in a later settling of the adhesive.

Regarding claim 30, Chau et al. and Stamm as applied above teach all of the limitations in claim 30 except for a specific teaching as to the degree the radiation curable adhesive is cured/crosslinked prior to its application to the structured surface. Absent any unexpected

results, one of ordinary skill in the art at the time the invention was made would have readily appreciated that an adhesive crosslinked to a higher degree prior to its application would reduce the processing/cure time required after its application and thus, improve production efficiency as it would apply to the radiation curable adhesive taught by Chau et al. as modified by Stamm.

(11) Response to Argument

Appellants arguments to Chau et al.

Appellants argue, "As acknowledged by the Examiner, Chau only teaches the use of an optically transparent material and is silent with regard to the use of an adhesive.". The Examiner has not acknowledged Chau et al. is silent with regard to the use of an adhesive. Chau et al. clearly teach the use of acrylic based epoxy, a radiation curable adhesive material, as the flowable material used to bond the substrate to the reflective, structured surface (Column 6, lines 6-13).

Appellants further argue, "Chau does not teach retroreflective articles. To the contrary, Chau et al. only teaches specularly reflective articles.". Chau et al. disclose forming an article having a structured surface engineered to return light in the direction of its source, it being noted appellants arguments acknowledge Chau et al. use a structured surface to return the maximum amount of light possible to its source (Appellants arguments page 3, second full paragraph), and this is a retroreflective article as understood in the art (See the 3M definition of retroreflection).

Appellants further argue, "Although Chau et al. says that any type of surface topography can be used to make his reflective article, the reference provides no suggestion as to what type of surface topography is meant.". As acknowledged in appellants arguments (Appellants arguments page 3, second full paragraph), Chau et al. desires a structured surface to reflect the maximum

amount of light possible to its source such that clearly a highly efficient retroreflective surface topography is desired.

Appellants arguments to Stamm

Appellants argue, "This disclosure makes it clear that Stamm is disclosing arrays of cube corner cavities that are immediately adjacent one another. That is, adjacent cavities touch one another. They are not separated from each other.". This argument is not commensurate in scope with either independent claim 22 or 31, it being noted all of the claims stand or fall together. Furthermore, Stamm clearly shows distinct and separate cube corner cavities (Figure 1).

Appellants arguments to the rejection of independent claim 31 (the broad independent claim), it being noted these arguments also apply to independent claim 22.

Appellants argue, "If cube corner cavities were used in place of the continuous peaks there would be a significant reduction in the amount of light reflected to the display.". It is noted this argument is unsupported by an affidavit or declaration. Furthermore, Chau et al. require a structured retroreflective surface chosen by one of ordinary skill in the art that is highly efficient, and Stamm clearly discloses a highly efficient retroreflective surface used in retroreflective articles of the type taught by Chau et al. such that their combination would have been obvious, it being noted the cube corner cavities taught by Stamm being discontinuous in the same sense that the periodic triangles taught by Chau et al. are discontinuous.

Appellants arguments to the rejection of independent claim 22 (the narrow independent claim).

Appellants argue, "It is also noted the Examiner has conceded that Chau does not disclose the use of a pressure sensitive adhesive.". That Chau et al. do not disclose the use of a

pressure sensitive adhesive was not conceded. Chau et al. clearly teach the use of an acrylic based epoxy adhesive. Chau et al. do not specifically note, i.e. it is unclear if, the adhesive is pressure-sensitive. However, Rowland was applied as evidence showing the pressure sensitive properties of an acrylic based adhesive in the same environment such that one of ordinary skill in the art would readily appreciate because the adhesive taught by Chau et al. is acrylic based it is also pressure-sensitive.

Appellants further argue, "It should be noted that acrylic based epoxy materials would not be considered to be pressure sensitive. To the contrary, they would be considered to be materials that cure to a non-pressure sensitive state because of the epoxy functionality present. Such materials are not inherently pressure sensitive and the Examiner's assertion that they are is incorrect.". The claims are not commensurate in scope with this argument. The claims do not require anything as to the pressure-sensitive properties of the adhesive after curing. Furthermore, it is noted in none of appellants previous responses, e.g. the responses filed by appellants on 10/7/03 and 3/15/04, have appellants asserted that the acrylic based epoxy taught by Chau et al. is not pressure-sensitive such that this argument appears to have been acquiesced. In any event, as noted above Rowland is evidence in the same art that acrylic based adhesives are pressure-sensitive. Additionally, in response to appellants argument that epoxy modified acrylic based adhesives are not pressure-sensitive due to the inclusion of epoxy, JP 042096876 (See English abstract) and JP 08157793 (See English abstract) are noted in light of this argument as evidence that epoxy modified acrylic based adhesives are considered pressure-sensitive. Thus, clearly as evidenced by Rowland, JP 042096876, and JP 08157793 the acrylic based epoxy adhesive taught by Chau et al. is pressure-sensitive.

Appellants further argue, "The Examiner's assertion that it would have been obvious to use the adhesive of Rowland is also faulty.". As noted above, Rowland is merely evidence in the same art that acrylic based adhesives are pressure-sensitive. Rowland is not applied as obvious to use the adhesive of Rowland in Chau et al.

In conclusion, because Chau et al. require a structured retroreflective surface chosen by one of ordinary skill in the art that is highly efficient, and Stamm clearly discloses a highly efficient retroreflective surface used in retroreflective articles of the type taught by Chau et al. the claimed limitations are met.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

John L. Goff
November 16, 2004

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